Value Pricing Projects - International[1]

AUSTRIA: NATIONAL VARIABLE TOLLING MOTORWAY NETWORK

What: Time based system for all vehicles under 12 tons, distance based system for all vehicles over 12 tons.

Where: Austrian highway system.

Method: Charge is paid via on-board units (OBUs) called *Go-Box*. More than 800 tolling gantries have been installed on the network. Enforcement system employs license plate reader by automatic character recognition and when appropriate, sends signals to the enforcement officer.

Start Date: 1997 – a time-based charge system a "Vignette system",
2004 – electronic distance based toll on vehicles over 12 tons,

Web site: Austrian Road Administration (http://www.bmvit.gv.at/en/index.html)

AUSTRALIA, MELBOURNE: MELBOURNE CITYLINK

What: A 22 km privately operated tollway linking major routes between Melbourne Airport to the port and industrial centers in the southeast. Tolls vary by vehicle class: cars, light trucks, and heavy freight. Night discounts for trucks and weekend pass discount for cars and trucks are offered. Toll road is undergoing an upgrage that should open in 2009.

Where: Melbourne, Australia

Method: transponders, account. The advanced freeway management system will include:
- ramp metering;
- reversible flow lanes during peak periods; and
- lane control to manage lane availability, traffic speed and driver information;

Web page: http://www.citylink.com.au/; www.vicroads.vic.gov.au; www.transurban.com.au

AUSTRALIA, SOUTH AUSTRALIA: ADELAIDE CRAFERS HIGHWAY

What: The 10 km highway was one of South Australia's largest road projects and includes two 500m long Heysen tunnels.

Where: South Australia, Australia. Links Adelaide to Crafers in the Adelaide Hills and then continues from Crafers as the South Eastern Freeway.

Method: This project also included implementing an Advanced Traffic Management System (ATMS) in connection with their existing Traffic Management System. The system monitors the Variable Speed Limit Signs (VSLS), Variable Message Signs (VMS), Changeable Message Signs (CMS) and video coverage along the length of the new section of the highway.

The traffic management and surveillance system includes cameras, infrared tall vehicle detectors and signs, lane use signals and tunnel control systems.

[1] Sources listed on page 10

The Changeable message signs installed at every 200m along the highway in 2005 can display three different messages (Green for normal traffic conditions – with distance to towns and turnoffs; yellow or red if hazard ahead; and red for warnings with appropriate driver information. CMS allow for active traffic management with the ability to change the speed limit of the road from Transport SA headquarters in Adelaide

Completion Date: March 2000

CANADA, ONTARIO: 407 EXPRESS TOLL ROUTE (ETR)

What: The 407 Express Toll Route (ETR), one of the first open access all electronic toll highways, opened its first sections in October 1997. To accommodate future traffic needs, 407 ETR has the capability of expanding from six to ten lanes

Where: Ontario, Canada – The 407 ETR runs east-west just north of Toronto (Canada's largest city), from Brock Road in Pickering in the east to the QEW / 403 interchange in Hamilton in the west.

Method: Electronic toll and automatic vehicle identification system, vehicle detector and classifier

Fees: Charges vary depending on the time of day (peak hours/weekday); vehicle class; and distance traveled. Discounts are given if vehicle has a transponder type device.

Web page: http://www.407etr.com/

CHILE, SANTIAGO: A SERIES OF TOLL ROADS AROUND SANTIAGO

What: A network of urban toll roads with varying charges.

Where: Santiago, Chile

Method: Tolls paid by drivers vary depending on the time of day and the number of kilometers traveled. Tolls are increased when speed drops below 50 km per hour.

Public Opinion: Initial resistance to charging ended after the operation began and time savings increased.

CHINA, BEIJING: REAL-TIME TRAFFIC INFORMATION SYSTEM

What: Installed a robust traffic information and management system to collect, analyze and manage real-time traffic in preparation and use during the 2008 Summer Olympics.

Where: Beijing, China.

Method: The traffic information system is intended to collect, process, analyze, display and store real-time traffic information from systems in and around the city, with the result of controlling and efficiently managing the road infrastructure to increase traffic volumes.

Project Start: 2005

Project Complete: 2008.

ENGLAND, DURHAM: ROAD USER CHARGE SCHEME

What: This cordon-based pricing system charges drivers to enter a fixed zone.

Where: Durham, England – historic city center, cathedral and castle area.

Method: Access is via a single road. Charge is applied Monday through Saturday from 10:00 am to 4:00 pm. No fee during off hours. Drivers pay while exiting the area at a pay station. Closed-circuit television surveillance.

Results:

- 85 percent reduction in vehicle traffic (2000 to 2000 vehicles per day);
- 10 percent increase in pedestrian activity; and
- increase in bus usage.

Public Opinion: Significant improvement – 70 percent now believe the charge is a good idea (versus 21 percent prior to implementation). 78 percent now believe Durham City is a safe place to visit (versus 68 percent prior to implementation).

Project Start: October 2002

Web page:
www.durham.gov.uk/durhamcc/usp.nsf/web/pages+with+sections/Transport+and+Streets+-+Parking-Durham+Road+User+Charge+Zone

ENGLAND, LONDON: CORDON PRICING

What: Cordon pricing in the central zone of London. Single daily charge to enter the zone.

Where: London, England – central zone

Method: Uses an automatic number plate recognition (ANPR) system; License plates are scanned when entering the central zone. Those without a permit are charged a fee via the mail. Charge is applied to vehicles entering zone Monday through Friday between 7:00 am and 6:30 pm.

Fees: 90 percent discount for zone residents. Revenues generate 100 million pounds (80 percent is spent on improving bus service within London). Projected net revenue for 2007/2008 is about 140 million pounds, reflecting an increase in the charge.

Results:

- traffic entering zone decreased 18 percent,
- congestion in zone decreased 30 percent,
- buses and taxis increased 20 percent,
- bus reliability and travel times improved,
- congestion charging has had neutral impact on central London economy

Project Start: 2003

Web page: London Congestion Charging: www.tfl.gov.uk/roadusers/congestioncharging/

ENGLAND, LONDON: HEATHROW T5 MULTI-STORY CAR PARK

What: The T5 Multi-Story Car Park is an automated parking system is located at Heathrow Airport.

Where: Heathrow Airport's Terminal 5 parking structure.

Method: The automated system employs a plate recognition system and prints the plate number on the ticket. Each driver is directed to an empty parking space. This information is updated in real time. The sensors are all networked to a central system, which checks every few seconds for an update on the parking space status.

Return space location system – when returning to the vehicle, the driver may insert his or her ticket into the locator terminal and a 3D map of the structure will light up the region where the car is parked.

Directing vehicles to open spaces eliminates some circling and GHG emissions.

ENGLAND, LONDON: M6 MOTORWAY TOLL ROAD (M6T)

What: Opened in December of 2003, this privately financed and operated three-lane toll road provides a link around Birmingham. The motorway is 27 miles in length, has eight entry and/or exit junctions, and six toll stations.

Where: Bypass of M6 north of Birmingham to the M42 east of Birmingham.

Method: Variable tolls based on vehicle type, time of day, day of travel and day versus evening travel.

Web page: http://www.m6toll.co.uk/pricing/

FRANCE: TOLL MODULATION

What: Extensive toll road network

Where: France

Method: In 1992 instituted a Sunday afternoon toll. Tolls have evolved to today where variable speed tolling is applied. Shifted toll control from national level to a county level in early 2000s.Over 4,500 miles operated by 6 mainly publicly owned companies (ASF, SAPRR, SANEF, ESCOTA, AREA, and SAPN).

Different variable tolls applied: time variable based on time of day; itinerary variable based on route traveled; environmental variable based on vehicle emissions.

Start Date: 1955
1998 – implementation of time variable toll

Web page: http://www.sanef.com/en/index.jsp

FRANCE, PARIS: A86 WEST TUNNEL

What: The final link of the 80 km A86 ringroad around Greater Paris. Two toll tunnels – one double-deck tunnel for light vehicles.

Where: Paris, France. Ringroad around Greater Paris, from Malmaison to Versailles.

Method: Advanced Traffic Management System (ATMS), techniques. An information system automatically collects traffic data such and speed and density of traffic. This information is relayed to

a safety and control office to allow quick and effective control of vehicles entering, using and exiting the tunnel. The tunnels also feature 350 DIVA cameras for the instantaneous detection of non-moving vehicles to supplement the fire alarms, air quality detectors and other traffic management systems that usually determine incidents and intervention response.

Completion Date: 2010

GERMANY: NATIONAL MOTORWAY CHARGING SCHEME FOR HGVS

What: National motorway charging scheme for heavy goods vehicles (HGVs). System was instituted to address the high volume of trucking on German highways. Thirty-five percent of all truck kilometers on Germany's highways are made by foreign trucks.

Where: Germany highway system.

Method: All trucks weighing over 12 tons pay a charge based on distance traveled, emissions by vehicle class, and number of axles. Charge is paid via on-board units (OBUs), manually, or via internet. Long term method will mostly be OBUs.

Start Date: January 2005

Results: - Six percent shift to rail from road freight.
- One negative impact – some trucks are diverting off the highways onto other roads to avoid paying the charge.

Web sites: - Toll Collect (www.toll-collect.de);
- German Federal Transport Ministry (www.bmvbs.de/en)

GREECE, ATHENS: ATHENS TRAFFIC MANAGEMENT SYSTEM

What: The Athens Traffic Management System (TMS) was planned in 2002 and opened in time for the 2004 Summer Olympics.

Where:

Method: The TMS is controlled from two control centers in case one becomes inoperable. Data come from multiple sources: close circuit television, traffic signals, ground loop detectors, speed radar devices, security personnel, and traffic police. The TMS system uses algorithms to determine the best fix and automatically acts via message signs on the highway by adjusting the traffic signal phasing and alerting the traffic police.

Completion Date: Summer 2004

GREECE, ATHENS: ATTIKI ODOS MOTORWAY

What: A tolled highway that is actually three main highways with an outer ring under construction.

Where: The three separate highways are: Stavros Spata A/P Motorway (52.4 km); Attiki Odos (47 km); and Markopoulo to Eleftherios Venizelos (12.9 km). The outer ring highway is the Aigaleo Ring (8 km).

Method: The Integrated Toll and Traffic Management System (ITTMS) allows for smart cards and electronic toll collection (ETC).

HUNGARY: SPEEDWAY NETWORK

What: Time based system for all vehicles for about 640 km of current highway system.

Where: Hungary highway system.

Method: System charges are based on time dependent access. There are no toll gates or check point. A mileage based tolling system is recommended beginning in 2008 to ensure all users pay according to their actual use of the roads.

Start Date: 1996

ITALY, GENOA: CORDON PRICING

What: Cordon pricing system created to protect a 2.5 square kilometer area of the historical downtown area.

Where: Genoa, Italy – historical downtown area

Method: Cordon pricing. Fees are collected per trip with fares varying according to day of the week, time of day, and environmental conditions. Uses a license plate video recognition system.

Web page: http://www.progress-project.org/Progress/genoa.html

ITALY, ROME: HISTORICAL CENTER

What: Since 2001, controlling access to historical center of city by combined Access Control System and Road Pricing Scheme.

Where: Rome, Italy

Method: Gates and cards. Restriction period (6:30 am to 4:00 pm) controlled through access gates and permits (transponders/on-board units and smart cards).

Results: - decrease in overall traffic throughout the day.
- decrease in the morning peak hour (8:30 am to 9:30 am)
- increase in public transit use

Future plans: potential future applications discussed: charging two wheel vehicles, and extending application to evening hours from 4:00 pm to 11:00 pm

JAPAN: NATIONAL TOLLING MOTORWAY NETWORK

What: Tolling covering 8,800 km of total highway system. Tolling replaced vehicle and fuel taxes for financing roads program.

Where: Japan highway system.

Method: Current tolls are distance based, with a double charge for large vehicles. System uses electronic tolling collection with on-board units.

Start Date: 1952

Web site: Japanese Road Bureau, Ministry of Land, Infrastructure and Transport (www.mlit.go.jp/road/road_e/index_e.html)

KOREA, SEOUL: NAMSAN TUNNELS #1 AND #3

What: Congestion toll pricing in two tunnels

Where: Seoul, Korea

Method: Day toll, nights and Sundays free.

Web page: - *Four-Year-Old Namsan Tunnel Congestion Pricing Scheme in Seoul* (http://www.iatss.or.jp/english/research/26-1/pdf/26-1-03.pdf)

- Seoul Metropolitan Government (http://english.seoul.go.kr/today/news/traffic/1240291_3327.html)

MALTA, VALLETTA: CONTROLLED VEHICULAR ACCESS (CVA)

What: Cordon pricing or as it is referred to in this city, Controlled Vehicular Access is a city wide charge based on time traveled into the center city area.

Where: Valletta, Malta

Method: Fees are assessed using Automatic Number Plate Reading (ANPR) technology and dedicated camera systems to monitor and photograph vehicles entering and exiting the CVA boundary. A charge is based on time traveled (amount and time of day) in the city.

Start: May 2007

Web page: Controlled Vehicular Access (http://www.cva.gov.mt/)

NORWAY, BERGEN: CORDON PRICING

What: Cordon pricing – a toll is placed on vehicle traffic entering the city. This application was initially developed to help pay for infrastructure but evolved into congestion management tool. On average, 30 percent of state's budget for road construction comes from toll revenue. Revenue for public transit and roads is split 50/50.

Where: Bergen, Norway – First city in Europe to introduce cordon pricing system

Method: Toll Ring. Only incoming traffic is charged. Facility is a fully electronic toll collection system, which debits accounts as drivers pass through unmanned toll booths around the cordon.

Fees: Fee is charged Monday through Friday, 6:00 am to 10:00 pm. Buses are exempt.

Results: - 6 to 7 percent decrease in traffic

Started: 1986

Web page: Norwegian Public Roads Administration: www.vegvesen.no

NORWAY, OSLO: TOLL RING

What: Cordon pricing – a toll is placed on vehicle traffic entering the city. This application was initially developed to help pay for infrastructure but evolved into congestion management tool.

Where: Oslo, Norway

Method: Toll Ring. Only incoming traffic is charged. Vehicle transponders with photo identification and charging through mail for non-permitted vehicles. 19 toll booths around the city center.

Fees: Fee is charged at all times of day, seven days a week.

Results: - raised revenue for infrastructure investment
- slower traffic growth than national average
- two thirds of the population is in favor of a new toll ring where income is dedicated to public transit
- Chamber of Commerce reported no significant impact on trade
- first year of operation's initial investment of 250 million NKr was covered by revenue of 750 million NKr.

Started: 1990

Public Support: Initial support was limited. In 1989 before opening of toll ring 70 percent of population in Oslo region was against the charge. By 1996, support increased to 45 percent of the population in favor of the toll ring.

Web page: Norwegian Public Roads Administration: www.vegvesen.no

POLAND, GDAŃSK: A1 GDAŃSK to TORUŃ MOTORWAY

What: Tolled public-private highway. The motorway will be a dual carriageway with two lanes in each direction and an emergency lane as well as a median barrier. Bridges and overpasses will be constructed as necessary to cross rail lines and rivers. There will be one toll plaza on phase one of the road and toll arrangements on the slip road junctions as well.

Where: Gdańsk, Poland – link between the north and south of Poland from the Baltic ports of Gdańsk and Gdynia across the country to its ultimate end in Austria (Vienna) and then go through Slovenia to meet the Mediterranean and the Adriatic seas.

The Polish section of the A1 will be constructed in two phases. The first section of 90 km is currently underway and runs from Gdańsk to Nowe Marzy in the north of Poland. The Polish section of the A1 will run for 568 km from Gdańsk through Toruń, Łódź, Częstochowa and Katowice to Gorzyczki on the border. Phase two will be a 60 km section which will extend the southern end of the A1 to Toruń.

Completion Date: Phase One - 2008.

POLAND, GDAŃSK: A2 TOLL MOTORWAY

What: Tolled public-private highway. Phase I construction - 150km dual-lane road, 78 new bridges, 31 renovated bridges, 7 interchanges, 3 toll plazas, and 3 maintenance centers.

Where: The A2 motorway (610 km) will run through Warsaw to connect with Germany (German A12 autobahn) in the East and Belarus in the West as a part of the planned East-West Trans European motorway (2,500 km) Berlin to Moscow route (part of the E30).

SCOTLAND, EDINBURGH: RESIDENTIAL PARKING PERMIT LINKED TO ENVIROMENT

What: Proposed parking permits based on carbon dioxide emissions or engine size of vehicle.

Where: Edinburgh, Scotland

Proposed: July 2008

SINGAPORE: CORDON PRICING SYSTEM

What: Cordon variable pricing system where drivers pay to enter the central business and some arterial highways.

Where: City of Singapore – Central business districts and outer ring roads

Method: The current system is electronic road pricing (ERP) and based on a pay-as-you-use principle. Charges are applied in the central business districts from 7:30 am to 7:30 pm; and on the expressways and outer ring roads in the mornings from 7:30 am to 9:30 am. Rates charged are variable priced based on congestion level at time of entry and class of vehicle.

Results: - 13 percent reduction in traffic in charging zones during periods
- 20 percent increase in average traffic speed
- Increase in carpooling
- shift in vehicle trips from peak to non-peak times

Start Date: 1975 –

Web site: Singapore Government, Land Transport Authority (www.lta.gov.sg)

SPAIN, AUTOPISTA DEL SOL: AUTOPISTA MALAGA TO ESTEPONA

What: Toll Motorway

Where: Toll Motorway between Malaga, Spain and Estepona, Spain

Method: Toll facility uses an electronic toll collection system with on board electronic devices to charge each vehicle.

Fees: The basic fare is assessed based on vehicle type to all users from October to May.

Start Date: Operations began in June 1999

Web page: (http://www.autopistadelsol.com/ausol1/index.htm)

SPAIN, BILBAO AREA: ARTXANDA TUNNELS

What: Three tunnels create a triangular access corridor referred to as the Artxanda Tunnels, 1) Ugasko-Txorierri tunnel; 2) La Salve – Txorierri tunnel; and 3) La Salve – Ugasko tunnel.

Where: Three tunnels make up the Artxanda Tunnels, which are located between the Getxo coastline to the A-8 motorway in Erletxe, Spain. The tunnels allow for easier access to Bilbao's city center, the international airport and a new corridor in the Asua Valley.

Fees: Fees are reported to be applied during the day peak and off peak, with some holiday rates and nights are free.

Method: The fifteen lane facility uses an electronic toll electronic windshield card system

Web page: (http://www.tunelesdeartxanda.com/ingles/intro.htm)

SWEDEN, STOCKHOLM: CONGESTION TAX

What: Full scale congestion tax. In September 2006 the municipality of Stockholm voted in favor of permanent application of the congestion tax.

Where: Stockholm, Sweden – cordon ring covering 29.5 km of central Stockholm

Method: Cordon around city center with 19 control points, traffic cameras with Automatic Number Plate Recognition (ANPR) and transponders. Variable pricing by direction and time of day. Applied Monday through Friday, between 6:30 am and 4:29 pm.

Results: - Freight users switched to untolled roads;
- Freight users passed costs onto consumers;
- Traffic levels went down 22 percent;
- Public transit use went up 6 percent.

Web site: Swedish Road Administration (http://www.vv.se/templates/page3____21106.aspx)

SWITZERLAND: SWISS HEAVY VEHICLE FEE

What: Nationwide distance-based, variable tolling for Heavy Goods Vehicles. Switzerland's geographically central position in Europe created higher amount of transit traffic particularly HGV traffic, than in other more peripheral countries.

Where: Switzerland

Method: Fee is calculated according to the distance traveled, highest authorized weight, and emissions tariff. Information is collected via on board units (OBUs).

Start Date: January 2001

SOURCES:

; accessed 08/06/2008.
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Tollroad News, http://www.tollroadsnews.com/